

OCTOBER 15. SOUTHFIELDS, N. Y. A list was made of 24 mushrooms, and lichens and flowering plants were also observed. Leader, F. R. Lewis. Attendance 5.

OCTOBER 22. PALISADES AND ALPINE, N. J. Leader, James Murphy. Attendance 11. No detailed report.

OCTOBER 29. PALISADES INTERSTATE PARK. Mr. Joseph Bartha kindly volunteered to guide the Raymond H. Torrey Memorial trip to Long Mountain. No report of the attendance.

NOVEMBER 5. BOUND BROOK TO NORTH PLAINFIELD, N. J. This walk offered the various habitats which had been announced. No list was made, as the species found were those to be expected, except that we were disappointed not to find gentians. Leader, John A. Small. Attendance 27.

## PROCEEDINGS OF THE CLUB

### MINUTES OF THE MEETING OF OCTOBER 18, 1944

The meeting was called to order at 3:30 p.m. by President Levine in the Members' Room of The New York Botanical Garden. There were twenty-three members and guests of the Club present. The minutes of the preceding meeting were approved as read. Dr. Karling read the tentative ballot which had been prepared by the Nominating Committee for 1945. The President appointed a committee consisting of Drs. Karling, Graves, and Matzke as chairman, to draw up a memorial minute on Dr. H. M. Denslow.

The scientific program consisted of an interesting presentation by Prof. J. S. Karling on "Unusual Chytridiaceous Fungi from Brazil." After considerable discussion of chitin-destroying fungi, and of the evolutionary relationships within the whole group of the fungi, the meeting adjourned at 4:35 p.m. to partake of the refreshments generously provided by The New York Botanical Garden.

Respectfully submitted,

EDWIN B. MATZKE  
CORRESPONDING SECRETARY

### MINUTES OF THE MEETING OF NOVEMBER 15, 1944

The meeting was called to order at 3:30 p.m. by President Levine in the Members' Room of The New York Botanical Garden, with twenty-seven members and guests of the Club in attendance. The minutes of the preceding meeting were approved as read. The following memorial minute on Dr. H. M.

Denslow was read to the Club by the Corresponding Secretary. The Club voted that a copy of this minute be sent to the family of the late Dr. Denslow.

*Whereas:* Dr. Herbert McKenzie Denslow, a charter member of the Torrey Botanical Club, President of the Club during the years 1928-1929, and Editor of its *Bulletin* during the year 1924, died on September 7, 1944.

*Be it resolved:* that we, the members of the Torrey Botanical Club, express our sense of loss at his passing. His was a long and useful life, as pastor, teacher, and botanist. Born on August 20, 1852, he early became interested in systematic botany through his uncle, William Wallace Denslow (1826-1868). Both were charter members of the Torrey Botanical Club, in 1867. Although an Episcopal minister and later a professor of pastoral theology in General Theological Seminary, he always retained his enthusiasm for botanical collecting, being especially interested in the native orchids; a considerable list of published papers on this subject bears witness to his industry.

*Resolved further:* that a copy of these resolutions be sent to the members of his immediate family.

(Signed) Arthur H. Graves  
John S. Karling  
Edwin B. Matzke

November 10, 1944

The scientific program consisted of an inspiring talk by Prof. R. H. Goodwin of Connecticut College on "Some Effects of Light upon the Growth and Differentiation of the Oat Seedling." The speaker's abstract follows:

The apical meristem of the germinating oat seedling is protected by the sheath-like coleoptile as it is pushed to the soil surface by the elongation of the first internode—that portion of the stem between the scutellar and the coleoptilar nodes. Elongation of the internode is inhibited by light.

Two distinct phases in the inhibition of elongation can be distinguished. The first is characterized by high sensitivity to radiant energy and is due to the suppression of cell division. The extent to which cell division is inhibited depends directly upon the amount of radiant energy received by the plant. The second phase of the inhibition is characterized by a much lower sensitivity to radiant energy and is due to a reduction of cell elongation.

A study has been made of the development of vascular elements in the internode. Annular, spiral, and pitted elements are successively differentiated, but the presence of transitional types is emphasized. The first center of development of pitted elements arises at the scutellar node and a wave of differentiation surges upward from this point through the internode. A second center occurs later at the coleoptilar node, but the last portion to show pitted elements is in the growing region just below the coleoptilar node.

The rate of formation of spiral and particularly of pitted elements is greatly increased after exposures to visible light, pronounced effects being observed as early as twelve hours following weak irradiations. The close correlation between the light inhibition of elongation of the internode and the formation of pitted xylary elements which are incapable of growth in length, is significant.

The stimulus producing the inhibition of the internode may be received either by the tip of the seedling—the coleoptile or the true leaves contained therein, or by the internode itself. The internode exhibits a wide range of spectral sensitivity, being affected by wave lengths ranging from the ultra violet to the infra red. In the completely etiolated seedling carotinoids are abundantly present in the true leaves, but in other portions of the plant pigments are present only in small amounts. True chlorophyll is apparently absent. But

Frank (unpublished) has demonstrated the presence of a pigment with an absorption spectrum somewhat similar to chlorophyll, which is responsible for chlorophyll formation. It is not impossible that this pigment may also be involved in the inhibition of the inter-node, since it absorbs strongly in the red, a property not shared with the carotinoids.

After considerable discussion of Dr. Goodwin's interesting presentation, the meeting was adjourned at 4:35 p.m., but continued informally, with enjoyment of the refreshments generously provided by The New York Botanical Garden.

Respectfully submitted,

EDWIN B. MATZKE  
CORRESPONDING SECRETARY

#### MINUTES OF THE MEETING OF DECEMBER 5, 1944

The meeting was called to order at 8:15 p.m. by President Levine in Room 710 of Schermerhorn Extension, Columbia University. Forty-nine members and guests were present. The minutes of the preceding meeting were approved as read.

The scientific program of the meeting was presented by Prof. John W. Shive. Professor Shive gave a most interesting talk on "The Iron Manganese Relation in Plants," illustrating it with lantern slides.

After considerable discussion of the paper, the meeting was adjourned at 9:20 p.m.

Respectfully submitted,

HONOR M. HOLLINGHURST  
RECORDING SECRETARY

#### MINUTES OF THE MEETING OF DECEMBER 20, 1944

The meeting of the Torrey Botanical Club at The New York Botanical Garden was called to order at 3:30 p.m. by President Levine, with twenty-five members and guests in attendance. The minutes of the preceding meeting were accepted as read. The President appointed a committee consisting of Drs. Karling and Matzke to count the ballots for the election of officers for 1945. An auditing committee consisting of Professor Trelease, Chairman, Mr. Montagne, and Dr. Seaver was appointed by Dr. Levine to audit the books for the year 1944.

The scientific program consisted of an interesting talk by Prof. Ray F. Dawson of Princeton University on "Some Aspects of Alkaloid Production in *Cinchona*." The speaker's abstract follows:

A population of Philippine *Cinchona* "*Ledgeriana*" was found to be of hybrid origin. Plants bearing the morphological characteristics to be expected of haploids, diploids, tetraploids, and octoploids have been obtained from this population. Of these, the "tetraploid" is the most vigorous in growth.

Physiological experiments have shown that at least a substantial fraction of the total alkaloid output in the plant is localized in the root system. Increasing the supply of nitrogen to the root system may result in increases in the relative alkaloid content even though growth be no longer affected.

A discussion of Professor Dawson's paper was continued informally after the meeting adjourned at 4:40 p.m. while members enjoyed the refreshments generously provided by the ladies of The New York Botanical Garden.

Respectfully submitted,

EDWIN B. MATZKE  
CORRESPONDING SECRETARY

#### MINUTES OF THE ANNUAL MEETING, JANUARY 9, 1945

The annual dinner meeting was held at the Men's Faculty Club, Columbia University. Eighty-seven members and guests were present. The meeting was called to order at 8:20 p.m. by President Levine. The minutes of the preceding meeting were approved as read. Annual reports were read by the Corresponding Secretary and the Treasurer.

The names of the following newly elected officers of the Club were read by the Corresponding Secretary:

President:	Fred J. Seaver	
First Vice-President:	John A. Small	
Second Vice-President:	A. E. Hitchcock	
Corresponding Secretary:	Jennie L. S. Simpson	
Recording Secretary:	Frances E. Wynne	
Treasurer:	E. H. Fulling	
Editor:	Harold W. Rickett	
Bibliographer:	Lazella Schwarten	
Business Manager:	Anne M. Hanson	
Members of the Council:	John M. Arthur	Edwin B. Matzke
	Ralph M. Cheney	Sam F. Trelease
Delegate to the Council of the New York Academy of Sciences:	Bernard O. Dodge	
Representative on the Board of Managers of The New York Botanical Garden:	Henry A. Gleason	
Representatives on the Council of the American Association for the Advancement of Science:	Albert F. Blakeslee	P. W. Zimmerman

Dr. Levine introduced Dr. Seaver, the new President, who spoke a few words of greeting to the Club.

The scientific program of the evening was presented by Mr. P. J. McKenna who gave a very interesting talk on "The Relation of Botany to Horticulture." Mr. McKenna concluded with motion pictures in color of trees, shrubs, and herbaceous plants.

The meeting was adjourned at 9:30 p.m.

Respectfully submitted,

HONOR M. HOLLINGHURST  
RECORDING SECRETARY

#### MINUTES OF THE MEETING OF JANUARY 17, 1945

After tea, served by the faculty of the Biology Department of Fordham University in Larkin Hall, the meeting of the Torrey Botanical Club was called to order at 4:05 p.m. by President Seaver, with thirty-three members and guests present. The minutes of the preceding meeting were accepted as read. Dr. Seaver reported two vacancies on the Council caused by the election of members of the Council to other offices. Dr. Fulling nominated Drs. George S. Avery and P. W. Zimmerman to fill these vacancies. The motion was seconded and accepted by the Club.

The scientific program consisted of an interesting paper by Dr. Eleanor R. Witkus, entitled "Cytology of Tapetal Cells in *Spinacia*." The speaker's abstract follows:

Some of the divisions occurring in the tapetal cells of spinach are similar to those described by previous workers in other plants. There is, however, one type of division which is new to tapetal cell literature. This new type is called endomitosis. This process was first discovered by Geitler (1939) in insect material. During this type of division there is a reproduction of chromosomes, but no spindle is formed, and there is no true anaphase movement of the chromosomes. Throughout the whole process the nuclear membrane remains intact. The resulting nucleus has twice the number of chromosomes that were present in the original nucleus. Geitler divided endomitosis into four stages: endoprophase, endometaphase, endoanaphase, and endotelophase. Endoprophase is similar to the prophase of normal mitosis. The chromosomes contract until a maximum degree of condensation is reached. The condition of maximum contraction is referred to as endometaphase. There is no spindle and the chromosomes do not congress upon an equatorial plate. After attaining their maximum contraction the spindled attachment regions of the chromosomes divide and the chromosomes separate slightly. This stage is called endoanaphase, but there is no true anaphase movement of the chromosomes. After the spindle attachment regions divide the chromosomes begin their reversion to the resting stage. This reversion is called endotelophase.

In spinach the tapetal cells undergo two divisions during the meiotic process. Both these divisions take place during the zygotene synizesis stage. The first division may be one of three types. Normal mitosis may take place, but no cell plate is formed and a binucleate tetraploid cell results. In the second type, the cell may undergo an abnormal mitosis due to the presence of sticky chromosomal bridges. As a result a uninucleate tetraploid cell is formed with a dumb-bell shaped nucleus. Or the cell may undergo a third type of division, endomitosis, forming a tetraploid uninucleate cell.

The resulting cells may remain in the resting condition or may undergo a second division. The second division is in all cases endomitotic and like the first takes place during zygotene synizesis. The cell resulting from this second division is an octoploid cell, either binucleate, or uninucleate in which case the nucleus is dumb-bell shaped.

These endomitotic cycles, like those described by Geitler, consist of endoprophase, endometaphase, endoanaphase, and endotelophase. Throughout the whole process the nuclear membrane remains intact, there is no spindle and consequently no anaphase separation or polar movement of the chromosomes.

It seems probable that endomitosis may not be peculiar to the tapetal cells of *Spinacia*, but may have a wider application and may explain many of the cytological phenomena occurring in the tapetal cells of other plants, which up to now have been rather obscure.

The meeting was adjourned at 4:45 p.m. in order that the members might carry on an informal discussion and look at the excellent demonstrations prepared.

Respectfully submitted,

FRANCES E. WYNNE  
RECORDING SECRETARY

### NEWS NOTES

The following item came just too late to be included in the December number:

The California Academy of Sciences has just issued the Alice Eastwood Semi-Centennial Publications in its Fourth Series of Proceedings, honoring the 85 year-old botanist's fifty year term as a member of the Academy staff where she is active head of the botany department. Of interest to botanists and flower lovers, the 14 pamphlets include such titles as: "A Revision of the Genus *Fuchsia*," by Philip A. Munz, professor of botany at Pomona College; "Relations of the Temperate Flora of North and South America," by Prof. Douglas Campbell; "Water and Plant Anatomy," by emeritus Prof. George Pierce of Stanford. The series of publications is available to the public at the California Academy of Sciences in Golden Gate Park, San Francisco.

Through an oversight, the name of Prof. H. H. Whetzel of Cornell University was omitted from the list published in the last number of *TORREYA*, of botanists who died last year. His death occurred on November 30, 1944.

Mr. William T. Davis, well known to many members of the Torrey Club for his work in entomology, and on the local flora, as a leader of numerous nature walks on Staten Island, and for his activity in the Staten Island Historical Society, died on January 22, 1945.